Niveau(x) d'enseignement: 0 Numéro EDUQ : 8370686
Centre d'intérêt: 250

Baxter, J. D.

Ear disease and hearing loss among the Eskimo school population of Frobisher Bay / J. D. Baxter, R. F. Peroff, K. K. Charan ; McGill University Baffin Zone Project. -- [Montréal] : Université McGill, [1972?].
39 f. en foliotation multiple ; 28 cm.

Survey "undertaken April 26-May 12, 1972". Dépouillement partiel: Ear disease and hearing loss among the Eskimo population of Lake Harbour - Ear disease and hearing loss among the Eskimo population of Broughton Island.

Cote Dewey: / Cote LC: /

Descripteur(s): *Santé *Hygiène *Dépistage *Handicapé auditif

Identificateur(s) de nom: *Baffin Zone Project

Identificateur(s) de sujet: *Otite *Otolaryngologie *Inuit

Les trois rapports réunis dans ce document font partie d'une enquête otolaryngologique menée au cours de l'année 1972, auprès des population inuit de la région de Baffin sous les auspices du "McGill University-Baffin Zone Project" à la demande du ministère canadien de la Santé et du Bien-être. Le but de l'enquête est: 1. d'évaluer l'étendue des maladies auditives et de la surdité dans cette population; 2. d'identifier les problèmes individuels et de mettre en oeuvre des mesures appropriées d'intervention.

A Frobisher Bay, 596 enfants ont été examinés; à Lake Harbour, 93% des 400 Inuit, enfants et adultes l'ont été et à Broughton Island, 78.6% des 328 Inuit, enfants et adultes. Cette opération de dépistage a eu lieu au printemps 1972.

Type de document: r
Notice(s) connexe(s): 8370687
Auteur de l'analyse: fr

E 0 0 0 8370686

Ear disease and hearing loss among the eskimo school population of Frobisher Bay - of Lake Harbour - of Broughton Island.

J.D. Baxter
R.F. Peroff
K.K. Charan

E D U Q 8370686

EAR DISEASE AND HEARING LOSS AMONG THE ESKIMO SCHOOL POPULATION OF FROBISHER BAY

EAR DISEASE AND HEARING LOSS AMONG THE ESKIMO POPULATION OF LAKE HARBOUR

EAR DISEASE AND HEARING LOSS AMONG THE ESKIMO POPULATION OF BROUGHTON ISLAND

J.D. Baxter, M.D.
R.F. Peroff, M.D.
K.K. Charan, Ph.D.

Department of Otolaryngology
McGill University

McGill University
Baffin Zone Project

Undertaken April 26 - May 12, 1972

ACKNOWLEDGEMENTS

The authors are grateful to Doctor D. Cameron, co-ordinator for the McGill University Baffin Zone Project, and Doctor A.T.D. Williams, Medical Zone Director and Physician-in-Chief, Frobisher Bay General Hospital, who arranged for the survey. Miss S. Bernstein assisted in the collection of the Audiology data, Miss A. Baxter assisted in the clerical work.

Thanks are due to the personnel in the schools at Frobisher Bay, Lake Harbour and Broughton Island and to the Nursing Staff at Lake Harbour (Mrs. Otilia Peyison) and at Broughton Island (Miss K. Kinloch, Miss J. Lees and Miss J. McRoberts) for their assistance. Their co-operation was superb.

Thanks are also due to Mr. Paul Brownlee, Settlement Manger at Lake Harbour, and to R.C.M.P. Officer Gilbert Cox and his wife, Mrs. Brenda Cox at Lake Harbour who were most helpful.

Mr. James S. Deyell, the Hudson Bay Manager at Broughton Island, was most co-operative. He provided new snowmobiles for testing of noise levels.

INTRODUCTORY REMARKS

This report is part of an ongoing Otolaryngological Survey of the Eskimo population of the Baffin Zone, which is anticipated will be completed within the 1972 calendar year. The survey is being carried out at the request of the Department of National Health and Welfare of Canada under the auspices of McGill University - Baffin Zone Project.

The purpose of the survey is to:-

(1) Assess the extent of ear disease and hearing loss in the Eskimo population.

(2) Identify individual problems and initiate procedures for their appropriate management.

Every Eskimo seen by the survey has an ear, nose and throat examination and hearing test. The findings are recorded on a Check Sheet (Appendix I) which facilitates analysis and which will eventually be included in the individual's permanent record. This Check Sheet has been modified for the remainder of the survey (Appendix II).

The otologic examination consists of the following steps:-

(A) Gross inspection of the external ear

(B) Removal of cerumen or epithelial debris (oovaloo), if necessary.

(C) Visualization of the tympanum (pars tensa and pars flaccida).

(D) Assessment of tympanic mobility using a pneumatic otoscope (Siegle's)

The findings are classified according to the following criteria:-

(1) Normal tympanic membrane.

(2) Minimal scarring - intra tympanic scarring or calcification of the pars tensa not significantly affecting mobility.

(3) Maximal scarring - scarred, retracted and/or calcified tympanic membrane with marked immobility over some of the surface area.

(4) Serous (catarrhal) otitis media - fluid within the middle ear, a non-suppurative process secondary to Eustachian tube dysfunction and its sequelae.

(5) Acute otitis media - active, acute inflammation of the middle ear.

(6) Chronic otitis media - perforated tympanum of long standing with no evidence of suppuration.

(7) Chronic suppurative otitis media - perforated tympanum of long standing with evidence of suppuration.

(8) Attic involvement - perforated pars flaccida.

(9) Cholesteatoma.

The nose and throat examination consisted of a detailed inspection of the areas during which particular attention is directed towards the following observations:-

(1) The patency of the nasal passageways.

(2) The presence of nasal secretion.

(3) The character of nasal secretions when present - watery or crusted.

(4) The condition of the teeth.

(5) The presence or absence of tonsils and adenoid. The size and condition of the tonsils, if present.

(6) The presence of palpable anterior and posterior cervical lymph nodes.

AUDIOMETRY

Measuring hearing loss among Eskimos presents problems because there are no sound-proofed areas available for audiometry. Thus, measurements, particularly for low frequencies, cannot be regarded as valid and reliable under 30 db. (I.S.O.) We, therefore, set out to screen at a 30 db. level over the frequency range 500-4000 Hz. and we regarded failure to respond to two or more frequencies within this range as evidence of significant hearing loss. Pure tone audiometry was also done in selected cases.

For the purpose of this survey hearing is classed as:-

(1) Functionally normal hearing - in which the individual has normal hearing.

(2) Functionally adequate hearing - in which the individual does not have normal hearing but the degree of impairment does not seriously interfere with his ability to communicate. It is

important that this be recognized as the individual may require special consideration, as in school.

(3) Functionally inadequate hearing - in which the individual has a marked impairment of hearing which seriously interferes with his ability to communicate. It is imperative that this handicap be recognized and that appropriate measures be taken to correct or assist the problem.

APPENDIX I.

Name: .....Disk No: .....
Location: .....
Birth Date: ..... Sex: Male ..... Female .....
Occupation: .....
Noise Risk: Work ..... Snowmobile .....Rifle.....
Other .....

E.N.T. EXAMINATION

EAR CANAL R. L.

Clear ... ...
Oovaloo ... ...
Cerumen ... ...

NOSE .....
.....

MOUTH .....
.....

TEETH: Good ... Fair.... Poor ....

TONSILS
Small .....
Medium .....
Large .....
Acute .....
Removed .....

GLANDS
Palpable: Yes..... No ....

EAR DRUMS

R. L.

MOBILITY (SIEGLE'S)

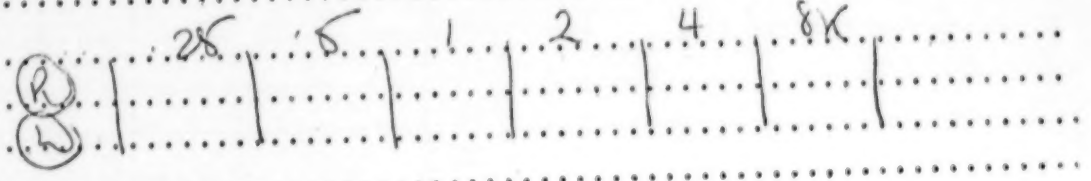
	R.	L.
Normal	.....	.....
Restricted	.....	.....
Fixed	.....	.....

CONDITION

	R.	L.
Normal	.....	.....
Minimal Scarring	.....	.....
Maximal Scarring	.....	.....
Serous O.M.	.....	.....
Acute O.M.	.....	.....
Chronic O.M.	.....	.....
Chronic Supp. O.M.	.....	.....
Attic Involvement	.....	.....
Cholesteatoma	.....	.....

HEARING AID: R..... L .....Specifications of Aid and Mold Required: .....
.....
.....

NOTES: .....



.....
.....
.....
.....
.....

APPENDIX II.

Name: .....Disk No:.....Location:.....

Birth Date: .....Male:.....Female:.....

Occupation: .....

Noise Risk: Work: .....Snowmobile: .....Rifle: .....Other:.....

E.N.T. EXAMINATION

EAR CANAL	R.	L.
Clear	....	....
Oovaloo	....	....
Cerumen	....	....

NOSE .....

.....

MOUTH .....

.....

TEETH: Good ....Fair....Poor ....

TONSILS

Small .....
Medium .....
Large .....
Acute .....
Removed .....

GLANDS

Palpable: Yes .... No ....

EAR DRUMS

R. L.

MOBILITY (SIEGLE'S)

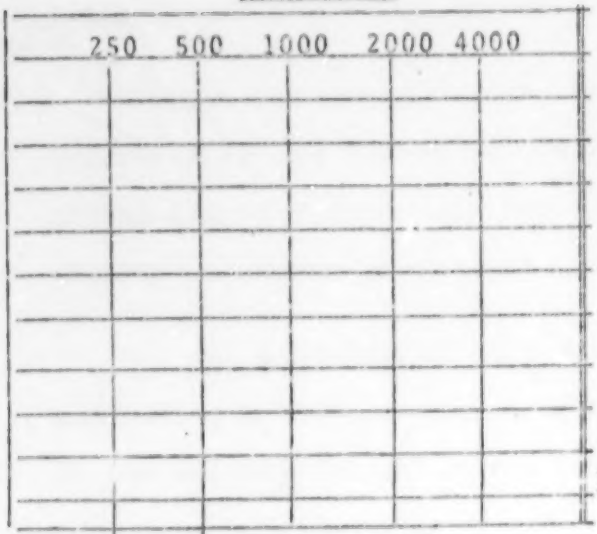
	R.	L.
Normal	....	....
Restricted	....	....
Fixed	....	....

CONDITION

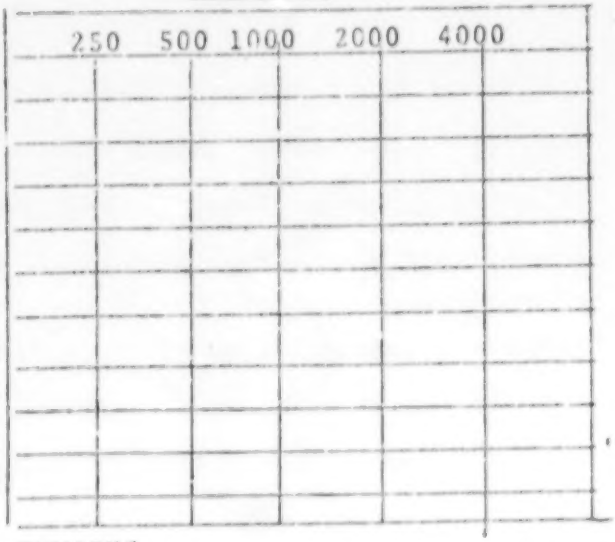
	R.	L.
Normal	...	...
Minimal Scarring	...	...
Maximal Scarring	...	...
Serous O.M.	...	...
Acute O.M.	...	...
Chronic O.M.	...	...
Chronic Supp. O.M.	...	...
Attic Involvement	...	...
Cholesteatoma	...	...

AUDIOMETRY

RIGHT EAR



LEFT EAR



HEARING AID: R.....L.....

REMARKS: .....

.....

EAR DISEASE AND HEARING LOSS AMONG THE ESKIMO SCHOOL POPULATION IN FROBISHER BAY

(Survey April 26 - May 4, 1972)

Frobisher Bay, with a population of 2,400, is the administrative centre and the largest settlement in the Baffin Zone in the Eastern Canadian Arctic.

There are two schools in Frobisher Bay, a high school, the Gordon Robertson Education Centre, and a primary school complex, the Sir Martin Frobisher School. The latter has divisons in Frobisher Bay and in Apex, a sub-community of Frobisher Bay. All the pupils at the Sir Martin Frobisher School complex are permanent residents of the settlement, while the majority of the high school students come from outside settlements and live in residence. The high school serves the entire Baffin Zone.

A total of 596 children were examined by the survey. The findings are presented in Tables I to V.

The otoscopic results are presented in Table I, II and III. The children are listed according to their year of birth. Ears are classified as bilaterally normal, unilaterally normal or bilaterally abnormal in terms of percentages of ears [596 students = 1192 ears].

The majority of ears are unilaterally or bilaterally abnormal indicating a high incidence of pathology. This is more prevalent in the primary school as the percentage of bilaterally normal ears increases considerably in the high school. As the high school students

come from all over the Baffin Zone it is difficult to interpret the findings.

Tables I, II and III also summarize the percentages of ears according to the pathological criteria. The ears that are classified as minimally or maximally scarred generally displayed no functional hearing deficit. Serous otitis media was occasionally observed. No case of acute otitis media was seen during the period of the survey. There was a marked incidence of chronic otitis media and chronic suppurative otitis media - 27.1% of ears in the primary school and 14.2% in the high school. The term chronic otitis media and chronic suppurative otitis media may be interchangeable as it depends entirely on whether the ear is infected or not at the time of examination. Ears with large central perforations usually manifested hearing loss on audiological examination. Attic perforation was rare (0.25%).

Less than 4% of tympanic membranes were not visualized because the canals were occluded by either cerumen or epithelial debris (oovaloo). Attempted removal was made in all cases but frequently it was difficult to maintain the child's co-operation and the endeavour was therefore terminated.

No gross abnormalities of the external ears were observed. The children were noted to have ear canals of a large diameter than normally found among the non-Eskimo population in the south. Several children had impetigo and two manifested marked disease on the

posterior part of the pinna.

RHINOLOGICAL EXAMINATION

Examination of the nose showed that many children had profuse anterior, watery discharge or a markedly dry crusting often covering underlying, ulcerated mucosa. An unexpected finding in one youngster was a foreign body which, on removal, proved to be an eraser.

TONSILS

The relative size and condition of the tonsils were observed and recorded in Tables IV and V. The majority of the students in both the primary school and the high school had tonsils that were small in size. Few Eskimo children had had a previous adenotonsillectomy. No association between ear disease and size of tonsils was noted.

CERVICAL ADENOPATHY

Palpation of the cervical glands indicated palpable glands in the majority of the primary school children, but a much lower incidence among the high school students. This finding is not unlike that seen among children of the same age in Montreal.

TEETH

The teeth were examined and classified as being in good, fair or poor condition (Table IV and V). There is a significant

degree of dental pathology among the Eskimo children. One, twelve year old boy, seen had a complete set of dentures. In the course of the survey it became apparent that the children with the markedly poor teeth inevitably were also the ones with chronic otitis media. Usually these children were wearing clothes which indicated a poorer social-economic background.

AUDIOMETRY

No sound-proofed areas were available for audiometry. The pupils in the primary school complex were tested in vacant classrooms and the high school students in the library. Under these circumstances measurements, particularly for low frequencies, cannot be regarded as valid and reliable under 30 db. (I.S.O.). We, therefore, screened hearing at a 30 db. level over the frequency range 500-4000 Hz. and we regarded failure to respond to two or more frequencies within this range as evidence of significant hearing loss.

The school teachers were interviewed in order to ascertain which pupils they felt were having hearing difficulty in their classes.

On the basis of clinical, audiological and teachers' observations two groups of students were compiled by Doctor K.K. Charan, one for whom hearing aids were recommended (Appendix A) and a second group of students who should be re-evaluated because of the possible unreliability of the audiological screening test (Appendix B). The former group of children have definite and significant

hearing problems while the latter may have. This re-evaluation could be done during the survey in September, 1972.

We recommend that the hearing aids be utilized initially only in the classroom where the teachers would assume responsibility for the proper utilization and care. Once the student became accustomed to the aid and dependable with regard to their proper handling, they would be allowed to wear them outside the classroom as well. Behind-the-ear aids would be better than body aids because of the noise produced by friction of heavy clothing against the aid. Some form of medical follow-up should be arranged as well to periodically examine the youngsters for activation of any ear infections.

For the older children, thirteen and up, in some cases reconstructive ear surgery could be considered. With techniques available today, there is a good possibility that surgical closure of the tympanic perforations and reconstructions of the ossicular chain may restore serviceable hearing thus eliminating the necessity of a hearing aid.

TABLE I

Results of Otoscopic Examinations of Sir Martin Frobisher School Students in Frobisher Bay
(All data is in percentages except for number of students)

Year of Birth	54	56	57	58	59	60	61	62	63	64	65	66	TOTAL
Number of Students	1	1	4	14	25	41	36	52	47	58	54	55	388
EARS													
Bilaterally Normal	0	0	25.0	21.4	36.0	43.9	47.2	40.4	48.9	41.4	53.7	32.7	
Unilaterally Normal	0	0	0	28.6	12.0	9.8	0	17.3	17.0	6.9	11.1	25.5	
Bilaterally Abnormal	100.0	100.0	75.0	50.0	52.0	46.3	52.8	42.3	34.0	51.7	35.2	41.8	
EAR PATHOLOGY													
Minimal Scarring	100.0	0	62.5	28.6	32	17.1	15.3	13.5	11.5	17.2	19.4	17.3	
Maximal Scarring	0	0	0	7.1	2	9.8	4.2	5.8	2.1	17.8	0	3.6	
Serous Otitis Media	0	0	0	0	0	2.4	4.2	2.9	3.1	2.6	0	5.5	
Acute Otitis Media	0	0	0	0	0	0	0	0	0	0	0	0	
Chronic Otitis Media	0	100.0	12.5	14.3	14	17.1	18.1	19.2	8.3	12.1	9.3	16.3	
Chronic Suppurative Otitis Media	0	0	0	14.3	6	4.9	8.3	6.7	10.4	4.3	2.8	4.6	
Attic Involvement	0	0	0	0	0	0	0	0	0	0	0	0	
Not Visualized	0	0	0	0	4	0	2.8	2.9	8.3	11.2	9.3	7.3	

TABLE II

Results of Otoscopic Examinations of Primary School Students in Apex
(All data is in percentages except number of students)

Year of Birth:	--	57	58	59	60	61	62	63	64	65	TOTAL
No. of Students	6	5	6	10	14	10	8	11	9	10	89
EARS											
Bilaterally Normal	0	0	17.7	20.0	21.4	0	37.5	9.1	22.2	0	
Unilaterally Normal	0	0	0	0	14.3	10.0	25.0	18.2	11.1	0	
Bilaterally Abnormal	100.0	100.0	83.3	80.0	64.3	90.0	37.5	72.7	66.7	100.0	
EAR PATHOLOGY											
Minimal Scarring	25.0	30.0	33.3	35.0	32.1	50.0	25.0	50.0	61.0	90.0	
Maximal Scarring	25.0	30.0	25.0	20.0	3.6	5.0	6.3	4.5	0	0	
Serous Otitis Media	0	0	0	0	3.6	0	0	0	0	0	
Acute Otitis Media	0	0	0	0	0	0	0	0	0	0	
Chronic Otitis Media	33.3	30.0	16.7	15.0	17.9	20.0	12.5	4.5	0	5.0	
Chronic Suppurative Otitis Media	16.7	10.0	8.3	10.0	7.1	20.0	6.3	18.2	5.6	0	
Attic Involvement	0	0	0	0	0	0	0	0	0	0	
Not Visualized	0	0	0	0	7.1	0	0	4.5	5.6	5.0	

TABLE III

Results of Otoscopic Examinations of Gordon Robertson Education Centre Students in Frobisher Bay
(All data is in percentages except number of students)

Year of Birth:	51	53	54	55	56	57	58	59	TOTAL
No. of Students	2	8	14	18	32	24	17	4	119
EARS									
Bilaterally Normal	100.0	62.5	57.1	72.2	43.8	45.8	52.9	100.0	
Unilaterally Normal	0	12.5	7.1	11.1	15.6	25.0	17.6	0	
Bilaterally Abnormal	0	25.0	35.7	16.7	40.6	29.2	29.4	0	
EAR PATHOLOGY									
Minimal Scarring	0	31.3	17.9	16.7	18.8	20.8	25.0	0	
Maximal Scarring	0	0	0	0	1.6	4.2	3.1	0	
Serous Otitis Media	0	0	0	0	0	2.1	0	0	
Acute Otitis Media	0	0	0	0	0	0	0	0	
Chronic Otitis Media	0	0	10.7	2.8	18.8	8.3	3.1	0	
Chronic Suppurative Otitis Media	0	0	10.7	0	9.4	4.2	3.1	0	
Attic Involvement	0	0	0	5.6	0	0	0	0	
Not Visualized	0	0	0	0	0	2.1	0	0	

TABLE IV

Results of Ear Canal, Teeth, Tonsils and Gland Examinations of Sir Martin Frobisher School Students in Frobisher Bay
(All data is in percentages except number of students)

Year of Birth:	54	56	57	58	59	60	61	62	63	64	65	66
No. of Students	1	1	4	14	25	41	36	52	47	58	54	55
EAR CANALS												
Clear	100.0	100.0	75.0	75.0	80.0	76.9	67.1	79.8	60.9	63.8	64.2	
Oovaloo	0	0	0	7.1	4.0	9.0	15.1	9.6	23.9	25.9	17.9	
Cerumen	0	0	25.0	17.9	16.0	14.1	17.8	10.6	15.2	10.3	17.9	
TEETH												
Good	0	100.0	25.0	42.9	44.0	46.3	41.7	47.0	47.9	46.6	47.0	
Fair	100.0	0	75.0	50.0	44.0	39.0	33.3	19.6	31.3	29.3	27.5	
Poor	0	0	0	7.1	12.0	14.6	25.0	33.3	20.8	24.1	25.5	
TONSILS												
Small	0	100.0	50.0	37.5	68.0	46.3	47.2	64.7	70.2	66.7	47.0	
Medium	100.0	0	50.0	50.0	28.0	22.0	33.3	23.5	19.2	22.8	37.3	
Large	0	0	0	7.1	0	19.5	0	3.9	4.3	3.5	7.8	
Acute	0	0	0	0	0	0	0	0	0	0	0	
Removed	0	0	0	7.1	4.0	12.2	19.4	7.8	6.4	7.0	7.8	
PALPABLE CERVICAL GLANDS	0	0	75.0	71.4	44.0	53.7	77.8	80.8	72.0	77.6	74.1	

TABLE V

Results of Ear Canal, Teeth, Tonsils and Gland Examinations of Gordon Robertson Education Centre Students in Frobisher Bay
(All data is in percentages except for number of students)

Year of Birth:	51	53	54	55	56	57	58	59	TOTAL
No. of Students	2	8	14	18	32	24	17	4	119
EAR CANALS Clear	100.0	75.0	75.0	75.0	71.7	87.5	58.8	87.5	
Oovaloo	0	25.0	0	13.9	15.0	0	5.9	0	
Cerumen	0	0	25.0	11.1	13.3	12.5	35.3	12.5	
TEETH Good	100.0	87.5	42.9	61.1	53.1	58.3	88.2	100.0	
Fair	0	0	28.6	27.8	28.1	29.2	5.9	0	
Poor	0	0	28.6	11.1	18.8	12.5	5.9	0	
TONSILS Small	100.0	87.5	78.6	83.3	62.5	83.3	52.9	100.0	
Medium	0	0	21.4	5.6	31.3	12.5	23.5	0	
Large	0	0	0	11.1	0	4.2	5.9	0	
Acute	0	0	0	0	0	0	0	0	
Removed	0	12.5	0	0	6.3	0	17.6	0	
PALPABLE CERVICAL GLANDS	0	25.0	35.7	5.6	43.8	25.0	17.6	50.0	

APPENDIX A

CHILDREN WHO NEED HEARING AIDS

NAME	ROOM	SEX	BIRTH DATE	EAR FOR WHICH HEARING AID IS RECOMMENDED
Sir Martin Frobisher Bay School				
SALAMONIE	10	M	17/02/65	RIGHT
CHARLIE PEA	8	M	6/12/63	RIGHT
ELIJAH	16	M	10/10/63	RIGHT
SHORTEE	15	M	11/07/60	RIGHT
JOMEE	14	M	22/01/62	RIGHT
JAMASEE	14	M	23/09/62	RIGHT
LEETIA	P2	F	19/06/58	RIGHT
PUDLOO	1	M	13/03/59	LEFT
Apex Primary School				
ISAAC	6A	M	18/02/57	LEFT
High School				
LEONIE TULUGAK	(E1-709)	M	18/07/56	RIGHT

K.K. Charan, Ph.D.

APPENDIX A

CHILDREN WHO NEED HEARING AIDS

NAME	ROOM	SEX	BIRTH DATE	EAR FOR WHICH HEARING AID IS RECOMMENDED
Sir Martin Frobisher Bay School				
SALAMONIE	10	M	17/02/65	RIGHT
CHARLIE PEA	8	M	6/12/63	RIGHT
ELIJAH	16	M	10/10/63	RIGHT
SHORTEE	15	M	11/07/60	RIGHT
JOMEE	14	M	22/01/62	RIGHT
JAMASEE	14	M	23/09/62	RIGHT
LEETIA	P2	F	19/06/58	RIGHT
PUDLOO	1	M	13/03/59	LEFT
Apex Primary School				
ISAAC	6A	M	18/02/57	LEFT
High School				
LEONIE TULUGAK	(E1-709)	M	18/07/56	RIGHT

K.K. Charan, Ph.D.

APPENDIX B

CHILDREN WHO MAY HAVE SIGNIFICANT HEARING PROBLEMS. NEED ANOTHER HEARING TEST - THE FIRST SCREENING TEST WAS NOT RELIABLE

NAME	ROOM NO.	SEX	BIRTH DATE
Sir Martin Frobisher Bay School			
JOMIE	6	M	11/09/63
ULLA (E7-1862)	P5	M	18/06/61
KENNETH FRADSHAM	P1	M	01/07 62
SATTIE	14	F	25/02/62
PUDLOO	12	M	05/05.65
BRIAR KENDALL	7	M	26/04/65
KOONOOH	P4	F	25/06/62
DAVID	P2	M	22/01/58
MARTHA PETER	P1	F	05/06/59
LUCY ANAWALK	P1	F	28/12/57
MALETTA ADSHOOYOULEEA	2	F	20/03/58
TOMMY CHARLIE	2	M	17/03/59
High School			
LOOTIE KOONEELOOSIE		M	13/10/54
ELIZABETH ITULUK(E7-1429		F	16/09/56
TIMOTHY PANILOO (E4-725)		M	03/06/56
NOAH JOAMIE (E6-789)		M	08/10/55
Apex			
PETER	4A	M	25/05/58

K.K. Charan, Ph.D.

EAR DISEASE AND HEARING LOSS AMONG THE ESKIMO POPULATION OF LAKE HARBOUR

(Survey May 5 - 7, 1972)

The settlement of Lake Harbour is situated on Westborne Bay off Hudson Strait on the south-east coast of Baffin Island. It is 80 miles south of Frobisher Bay. There are no roads and travel is restricted to air, sea and snow vehicles. The area is predominantly a rough rocky terrain with hills up to 600 feet in height. There are a few mossy areas. There are no trees.

The 1972 population statistics as provided by the Settlement Manager, Mr. Paul Brownlee, are:-

Lake Harbour Area

Eskimo	200
Others	17
Total:	217

Lake Harbour Settlement

Eskimo	183
*Others	17
Total:	200

*Settlement Manager, R.C.M.P. Officer, Settlement Nurse, School Teachers, Power Plant Operator, Hudson's Bay Co. Manager and their various dependents.

Killiktee Camp

Eskimo	17
Others	0
Total	17

Killiktee Camp is situated 10 miles distance on Hudson Strait. The 11 Eskimos in the camp at the time of the survey are not included in the survey.

The population of Lake Harbour is housed in thirty-nine dwellings and the Eskimos subsist, primarily, by hunting, fishing, handicrafts, settlement maintenance and welfare.

As shown in Table I, 93% of the total Eskimo population of Lake Harbour was examined by the survey.

The results of the otoscopic examinations are summarized in Table II. The majority of the adults had bilaterally or unilaterally normal ears. Minimal adhesions were commonly observed and in the majority of these cases the hearing was found to be functionally normal. It is interesting to note that no evidence of attic pathology was visualized.

Forty-five pre-school children ranging from six months to five years of age were examined and a high incidence of ear disease was found. The very young were not tested audiologically. Those over two years of age that were tested had functionally normal hearing.

Fifty-five school children ranging from six to fourteen years of age were examined in the school. Six children had bilaterally normal ears and normal hearing. It was not possible to visualize the ears in one child because of epithelial debris (oovaloo), but he had normal hearing. Thirty two children had evidence of previous ear infections as manifest by unilateral or bilateral minimal or severe

adhesions. The majority had bilateral problems. However, all these children had functionally adequate hearing.

Sixteen children had chronic otitis or chronic suppurative otitis media. These are listed in Appendix I.

Four children had high frequency loss at 4,000 and 8,000 Hz. Two of these children (age seven and twelve years) go hunting frequently with their fathers.

Five students from Lake Harbour were examined at the Gordon Robertson Education Centre in Frobisher Bay and are included. Elizabeth Ituluk (E7-1429, born September 16, 1956) has functionally inadequate hearing - Appendix II and also Appendix B - Ear Disease and Hearing Loss Among the Eskimo Population in Frobisher Bay.

Eighty-one adults (17 years or older) were examined - forty-two males and thirty-nine females. The majority of the adults had normal ears bilaterally. Only four males and seven females had chronic otitis media.

As shown in Table IV of the forty-two males tested audiologically, thirty-five or 83.3% had significant hearing loss which was predominantly a high tone sensorineural type. Only seven adult males, or 16.7% had normal hearing. Six out of the eleven females who had hearing problems had chronic otitis media with a conductive hearing loss.

It is purely coincidental, but a similar 83% of the males tested audiologically in Pangnirtung in March of this year had significant sensorineural hearing loss. This was felt to be secondary to noise. The sources of the noise are the snowmobile and the rifle.

The degree of sensorineural hearing loss of the average adult male in Lake Harbour is less when compared to that of the average male in Pangnirtung. It is interesting that while the sources of the noise are similar the hunting patterns are very different in the two settlements. In Pangnirtung, the hunters have to travel greater distances and are away for several days on hunting trips. In Lake Harbour, the hunters usually go out only for the day and are normally at home for a few days between hunting trips. Accordingly, the hunters in Lake Harbour are less exposed to extended periods of noise and have periods of several days rest between such exposure.

The Eskimos who would benefit by hearing aids are listed in Appendix II.

The condition of the tonsils, the presence of palpable cervical lymph glands, the state of the teeth and the presence of epithelial debris (oovaloo) or cerumen in the external ear canal is shown in Table III.

The majority of Eskimos in the settlement have small or moderate sized tonsils. If they are under twenty years of age

approximately one half will have palpable cervical lymph glands.

No association between ear disease and the size of the tonsils were noted. Two Eskimos in Lake Harbour have had their tonsils removed.

There is a significant degree of dental pathology among the Eskimos. Clinically, it was noted that the children with the poor teeth were also usually the ones with the ear pathology. Oovaloo or epithelial debris was more commonly observed in the external ear canal of the children.

IN SUMMARY

In summary, the average adult Eskimo in Lake Harbour can be described as having ear canals that are full of epithelial debris (oovaloo); the ear drums are normal or have minimal adhesions; they have small tonsils and no palpable cervical lymph glands. The teeth are in fair condition. The average female has functionally normal hearing. The average male has a high tone sensorineural hearing loss.

The average child has ear canals that are occluded by epithelial debris (oovaloo); the ear drums have minimal adhesions; they have small tonsils and palpable cervical lymph glands. Their teeth are in fair or poor condition. Their hearing is functionally normal.

TABLE I

DISTRIBUTION OF THE ESKIMO POPULATION OF LAKE HARBOUR IN RELATION TO AGE AND THE NUMBER AND PERCENTAGE IN EACH GROUP GIVEN EAR, NOSE AND THROAT EXAMINATIONS AND EXPLANATORY NOTES

Year of Birth	Pre 1900	1900 1909	1910 1919	1920 1929	1930 1939	1940 1949	1950 1954	1955 1959	1960 1964	1965 1969	Post 1970	TOTAL
Number in Group According to Settlement List	1	3	6	12	23	24	14	21	42	37	17	200
Number Examined	1	2	7	9	20	21	17	21°	38	33	17	186
Percentage Examined	100%	66%	100+%	75%	80%	87%	100+%	100%	93%	89%	100%	93%
Explanatory Notes re Population Distribution		1*	1 more seen than listed	3**	2* 1**	2* 1**	3 more seen than listed		3* 1**	5° 4?		

* Killiktee Camp - Eskimo in Camp at time of Survey
** Frobisher Bay - Eskimo in Frobisher Bay at time of Survey
° 5 Lake Harbour Students Examined in High School, Frobisher Bay and included

TABLE 2.

RESULTS OF OTOSCOPIC EXAMINATION - THE PERCENTAGE OF LAKE HARBOUR ESKIMOS SEEN IN EACH GROUP WITH NORMAL EARS AND WITH EARS SHOWING SPECIFIC PATHOLOGY

Year of Birth	Pre 1900	1900 1909	1910 1919	1920 1929	1930 1939	1940 1949	1950 1954	1955 1959	1960 1964	1965 1969	Post 1970
No. Examined	1	2	7	9	20	21	17	21	38	28	17
Bilateral Normal	100.0	100.0	72.0	66.0	55.0	48.0	32.0	19.2	11.7	10.5	25.2
Unilateral Normal	0	0	0	5.5	7.5	2.4	9.0	2.4	1.3	7.0	8.7
Minimal Adhesions	0	0	14.0	11.0	35.0	40.8	35.0	45.6	44.5	43.5	8.7
Severe Adhesions	0	0	0	11.0	2.5	4.8	3.0	9.6	10.4	9.0	0
Acute Otitis Media	0	0	0	0	0	0	0	0	0	0	5.8
Serous Otitis Media	0	0	0	5.5	0	0	0	0	1.3	1.5	11.6
Chronic Otitis Media	0	0	0	0	0	2.4	12.0	19.2	10.4	11.5	0
Chronic Suppurative Otitis Media	0	0	0	0	0	2.4	9.0	4.8	13.0	5.0	0
Attic Involvement	0	0	0	0	0	0	0	0	0	0	0
Cholesteatoma	0	0	0	0	0	0	0	0	0	0	0
Not Visualized	0	0	14.0	0	0	0	0	0	6.5	12.5	40.6

TABLE 3.

PERCENTAGE OF THE LAKE HARBOUR POPULATION WITH SMALL, MEDIUM LARGE, ACUTELY INFECTED OR REMOVED TONSILS; THE PERCENTAGE HAVING PALPABLE CERVICAL GLANDS; THE PERCENTAGE HAVING GOOD, FAIR OR POOR TEETH AND THE PERCENTAGE HAVING DEBRIS (OOVALOO) OR CERUMEN OCCLUDING THE EAR CANAL IN EACH AGE GROUP

...r of Birth	Pre 1900	1900 1909	1910 1919	1920 1929	1930 1939	1940 1949	1950 1954	1955 1959	1960 1964	1965 1969	Post 1970
...o. Population	1	3	6	12	23	24	14	21	42	37	17
...o. Examined	1	2	7	9	20	21	17	21	38	28	17
...ONSILS											
Small	100	100	57.2	77.7	85	67.2	59.0	48.0	52.0	43.2	53.1
Medium	0	0	28.6	22.2	15	24.0	34.2	48.0	43.2	50.4	41.3
Large	0	0	0	0	0	9.6	0	4.8	[illegible]	7.2	0
Acute	0	0	0	0	0	0	0	0	0	0	5.9
Removed	0	0	14.3	0	0	0	5.9	0	0	0	0
...ALPABLE ...ERVICAL ...LANDS	100	0	14.3	33.3	25.0	24.0	59.0	72.0	47.5	48	30
...EETH											
Good	0	0	0	33.3	25.0	47.6	70.6	42.8	26.3	25.0	58.8
Fair	100	50	14.3	33.3	30.0	32.9	29.4	28.6	47.3	17.8	17.6
Poor	0	0	42.9	33.3	30.0	14.4	0	28.6	26.3	57.2	5.8
No Teeth	0	50	42.9	0	15.0	4.8	0	0	0	0	17.6
...EBRIS ...RESENT	100	0	0	22	25	19.2	25	19.2	50	45	56
...ERUMEN ...RESENT	0	100	14.3	5.5	15	4.8	12.5	2.4	20	22	16.5

TABLE 4

LAKE HARBOUR ESKIMOS AGED 17 YEARS AND OVER TESTED AUDIOMETRICALLY AND FOUND TO HAVE HIGH FREQUENCY SENSORINEURAL (S) AND CONDUCTIVE (C) HEARING LOSS GREATER THAN 30 db. AT TWO OR MORE FREQUENCIES IN THE RANGE 500-4000 Hz. IN RELATION TO AGE AND SEX AND THE NUMBER OF EITHER REQUIRING HEARING AIDS

Year of Birth		Pre 1900	1900 1909	1910 1919	1920 1929	1930 1939	1940 1949	1950 1955	TOTAL
Number of Males Tested		1	1	4	6	10	12	8	42
Number of Females Tested		0	1	3	3	10	9	13	39
Males	S	1	1	4	6	9	10	2	35
	C							2	
Females	S		1	2		1		1	11
	C				1		1	4	
Number Requiring Hearing Aids		1		2	2		1	1	7

APPENDIX I

SCHOOL CHILDREN WITH SIGNIFICANT EAR DISEASE IN LAKE HARBOUR

	C.S.O.M.		C.O.M.		HEARING
	R.	L.	R.	L.	
IKKIDLUAK, OOLOOSIE KAMIGAK	X	X			UNRELIABLE RESULTS - PROBABLY SOME LOSS
ARLOOKTOO, LEEVEE				X	COULD NOT BE TESTED - LEARNING PROBLEM ?
SAGGIATUCK, SANIEJAK	X	X			FUNCTIONALLY ADEQUATE
QIMIRQPIK, NUYALINAQ	X			X	FUNCTIONALLY ADEQUATE
UTYE, MEEKEJUKE				X	FUNCTIONALLY NORMAL
IKKIDLUAK, TOOTOIYAK			X		FUNCTIONALLY NORMAL
ITULUK, INUSIRQ	X	X			FUNCTIONALLY NORMAL
ITULUK, CHARILE				X	FUNCTIONALLY ADEQUATE
MICHAEL, NALA	X			X	FUNCTIONALLY ADEQUATE
KOLOLA, MARY			X	X	FUNCTIONALLY ADEQUATE
MANNING, MARY KUDLOW				X	FUNCTIONALLY ADEQUATE
QUTQIQUQ, SAA (SHAW KOTAIG)				X	FUNCTIONALLY ADEQUATE
IKKIDLUAK, IOLA	X	X			FUNCTIONALLY ADEQUATE
KOLOLA, AKIEGO			X		FUNCTIONALLY NORMAL
UTYE, MAKEVEEK				X	FUNCTIONALLY NORMAL
OOLAYON, GELA			X		FUNCTIONALLY NORMAL

C.S.O.M. Chronic Suppurative Otitis Media
C.I.M. Chronic Otitis Media

APPENDIX II

THOSE WHO WOULD BENEFIT BY A HEARING AID

	ADULTS	DISC NUMBER	DATE OF BIRTH
1.	KOOCHIA, Luke Noah	E7-210	5-12-99
2.	AKAVAK, James (Has One)	E7-39	17-10-11
3.	TEMELA, Agee (Mild)	E7-66	15-05 12
4.	OOLAYON, Annie	E7-129	20-02-29
5.	ITULAK, Davidee	E7-1042	4-06-29
6.	KILLIKTEE, Shorty (Mild)	E7-308	20-08-49
7.	TIKIVIK, Martha	E7-314	3-03-50

(Bone Conduction Aid)
Mild - High Frequency Loss Only

	CHILDREN		
1.	MICHAEL, Pea (High Frequency Loss)	E7-2244	5-05-65
2.	QIMIROPIK, Nkyaliaq (Should be Rechecked)	E7-1494	15-01-65
3.	SANIEIAK, Saggiatuk (Should be Rechecked)	E7-1623	10-04-58
4.	ITULU, Elizabeth (Should be Rechecked) [In School at Frobisher Bay]	E7-1429	16-09-56

EAR DISEASE AND HEARING LOSS AMONG THE ESKIMO POPULATION OF BROUGHTON ISLAND

(Survey May 8 - 10, 1972)

The settlement of Broughton Island is situated on the north-east coast of Baffin Island three hundred miles north of Frobisher Bay. The usual route by air is over the Pangnirtung Pass and the eastern edge of the Penny Ice Cap. There is an all-weather landing strip at Broughton Island which serves a Dew Line installation.

The 1972 settlement population statistics are confused. The only population list available is for the Pangnirtung - Broughton Island area. The Settlement Manager does not have a specific list for Broughton Island.

The settlement population in April, 1972 according to the monthly report submitted by the Department of National Health and Welfare Nurse is:-

Adults	140
School Children	90
Children 1-6 Years	84
Under 1 year of Age	14
Total:	328

The population is housed in fifty-three dwellings and the Eskimos subsist by hunting, fishing, handicrafts, Settlement maintenance, employment with the Hudson's Bay Company and Welfare. Whale bone carving is a specialty of the area.

As shown in Table I - 78.6% of the Eskimo population was examined by the survey. The otological findings are summarized in Table II and the audiological findings are summarized in Table IV. Those who would benefit by hearing aids are listed in Appendix I.

Sixty pre-school children ranging from infancy to five years of age were examined. Only four of these children had bilaterally normal ears - fifty-six or 93.3% had evidence of previous or active ear pathology, sixteen or 26.6% had chronic otitis media. The most common otological finding was minimal or maximal adhesions. Audiologically, all that were tested had functionally adequate hearing.

One hundred and eleven school children were examined - one hundred and four were examined in the school at Broughton Island and seven were examined at the High School in Frobisher Bay.

Thirty-two or 28.8% of these students had bilaterally normal ears with functionally normal hearing. Sixty-two or 55.5% had evidence of previous ear infections as manifest by intact tympanic membranes with residual minimal or maximal scarring. All of these had functionally normal hearing. Fifteen or 13.5% had chronic ear problems (chronic otitis media or chronic suppurative otitis media), but all of them had functionally adequate hearing in one or both ears. In two students the ear drums could not be visualized because of oovaloo, but both had functionally normal hearing.

Ame Angmarlik (Birth date, 10-01-64, E6-1072) has an attic cholesteatoma in his right ear. He should be sent to Montreal, electively, for investigation and treatment.

Eighty-seven adults were examined, twenty-eight males and fifty-nine females. Of the twenty-eight males examined eighteen had normal ears, eight had minimal or maximal adhesions and two had chronic otitis media. Four had normal hearing and twenty-four or 85.7% had a hearing loss. This hearing loss was predominantly high tone sensorineural - Table IV.

Of the fifty-nine females examined forty-one had normal ears, fourteen had minimal or maximal adhesions and four had chronic otitis media. Forty-seven or 79.5% had normal hearing and twelve had a hearing loss. The hearing loss was sensorineural and/or conductive.

The condition of the tonsils, the presence of palpable cervical lymph glands, the state of the teeth and the presence of epithelial debris (oovaloo) or cerumen in the external ear canal is shown in Table III.

The majority of Eskimos in the settlement, regardless of age, have small tonsils. If they are under twenty years of age the majority have palpable cervical lymph glands. Two Eskimos have had their tonsils removed.

There is a significant degree of dental pathology.

IN SUMMARY

The average Eskimo child in Broughton Island has small tonsils, palpable anterior cervical lymph nodes and oovaloo occluding the external ear canals. The ear drums are intact, but have evidence of previous ear infections as manifest by minimal adhesions. The hearing is functionally normal.

The average adult has small tonsils and no palpable cervical lymph nodes. The ear drums are normal. The average male has a high tone sensorineural hearing loss while the female has normal hearing.

TABLE I

Distribution of the Eskimo Population of Broughton Island in Relation to Age Which Were Examined by the Survey

Population of Settlement According to Report of D.N.H. & W. Nurse	Adults - 140; School Children - 90; Pre-School Children - 98; Total - 328											
Year of Birth:	Pre 1900	1900 1909	1910 1919	1920 1929	1930 1939	1940 1949	1950 1954	1955 1959	1960 1965	1965 1970	Post 1970	Total
No. Examined	1	3	9	13	20	24	17	28	52	78	13	258

78.6% of Population Examined

TABLE II

RESULTS OF OTOSCOPIC EXAMINATION - THE PERCENTAGE OF BROUGHTON ISLAND ESKIMOS SEEN IN EACH GROUP WITH NORMAL EARS AND WITH EARS SHOWING SPECIFIC PATHOLOGY

Year of Birth	Pre 1900	1900 1909	1910 1919	1920 1929	1930 1939	1940 1949	1950 1954	1955 1959	1960 1964	1965 1969	Post 1970
No. Examined	1	3	9	13	20	24	17	28	52	78	13
Bilateral Normal	100.0	20.0	77.7	84.7	70.0	67.2	35.4	14.4	34.2	8.9	23.
Unilateral Normal	0	0	0	0	5.0	8.4	5.9	10.8	6.65	5.1	7.
Minimal Adhesions	0	40.0	22.2	15.4	20.0	14.7	44.3	64.8	47.5	47.3	23.
Severe Adhesions	0	40.0	0	0	5.0	4.2	0	1.8	2.8	3.2	0
Acute Otitis Media	0	0	0	0	0	0	0	0		1.3	0
Serous Otitis Media	0	0	0	0	0	0	0	0	1.9	8.3	7.
Chronic Otitis Media	0	0	0	0	0	4.2	14.8	3.6	1.9	8.3	23.
Chronic Suppurative Otitis Media	0	0	0	0	0	0	0	1.8	1.9	5.1	0
Attic Involvement	0	0	0	0	0	0	0	0	1.9	0	0
Cholesteatoma	0	0	0	0	0	0	0	0		0	0
Not Visualized	0	0	0	0	0	2.1	0	1.8	1.9	12.1	15.

TABLE III

PERCENTAGE OF THE BROUGHTON ISLAND POPULATION WITH SMALL, MEDIUM, LARGE, ACUTELY INFECTED OR REMOVED TONSILS; THE PERCENTAGE HAVING PALPABLE CERVICAL GLANDS; THE PERCENTAGE HAVING GOOD, FAIR OR POOR TEETH AND THE PERCENTAGE HAVING DEBRIS (OOVALOO) OR CERUMEN OCCLUDING THE EAR CANAL IN EACH AGE GROUP

Year of Birth	Pre 1900	1900 1909	1910 1919	1920 1929	1930 1939	1940 1949	1950 1954	1955 1959	1960 1964	1965 1969	Post 1970
No. Examined	1	3	9	13	20	24	17	28	52	78	13
TONSILS											
Small	100.0	100.0	100.0	100.0	95.0	100.0	88.5	72.0	77.9	85.8	77.0
Medium	0	0	0	0	5	0	11.8	21.6	19.9	7.7	23.0
Large	0	0	0	0	0	0	0	0	0	2.6	0
Acute	0	0	0	0	0	0	0	3.6	0	3.8	0
Removed	0	0	0	0	0	0	0	3.6	1.9	0	0
PALPABLE CERVICAL GLANDS	0	0	0	7.7	10.0	29.4	5.9	72.0	95.5	84.5	100.0
TEETH											
Good	0	33.3	0	0	10.0	49.8	41.3	54.0	64.8	32.0	30.8
Fair	0	33.3	33.3	62.0	50.0	41.5	47.2	36.0	30.6	30.7	23.1
Poor	100.0	33.3	66.6	38.0	30.0	8.3	11.8	10.0	3.9	35.8	23.1
No Teeth	0	0	0	0	10.0	0	0	0	0	1.3	23.1
DEBRIS PRESENT	0	33.3	33.3	22.0	20.0	29.4	5.9	28.8	67.7	44.8	61.6
CERUMEN PRESENT	0	0	0	7.7	0	25.2	5.9	7.2	7.6	11.5	15.4

TABLE IV

BROUGHTON ISLAND ESKIMOS AGE 17 YEARS AND OVER TESTED AUDIOMETRICALLY AND FOUND TO HAVE HIGH FREQUENCY SENSORINEURAL (S) AND CONDUCTIVE (C) HEARING GREATER THAN 30 db. AT TWO OR MORE FREQUENCIES IN THE RANGE 500 - 4000 Hz. IN RELATION TO AGE AND SEX AND THE NUMBER OF EITHER SEX REQUIRING HEARING AIDS

Year of Birth:		Pre 1900	1900 1909	1910 1919	1920 1929	1930 1939	1940 1949	1950 1954	1955 1959	1960 1964	1965 1970	Post 1970	TOTAL
No. Males Tested		0	0	6	4	6	6	6	0	0	0	0	28
No. Females Tested		1	3	3	9	14	18	11	0	0	0	0	59
Males	S	0	0	5	4	3	6	4	0	0	0	0	22
	C	0	0	0	0	1	0	1	0	0	0	0	2
Females	S	1	2	0	1	2	2	0	0	0	0	0	8
	C	0	1	0	0	1	0	2	0	0	0	0	4
No. Requiring Hearing Aids								1					

APPENDIX I

HEARING AIDS RECOMMENDED

Patient's Name	Disc No.	Birth Date
KOONEELUISIE, Goota	E6-706	15-01-54

ESKIMOS WHO MAY HAVE SIGNIFICANT HEARING PROBLEMS - NEED ANOTHER HEARING TEST

AKOOTOOK	E6-143	-03-1891
ANGMAKLIK, Pauloosie	E6-243	-10-11
ATAGOYUK, Mosese	E6-252	26-07-40
AUDLAKIAK, Josephee	E6-520	26-08-30
KOONEELIUSSE, Joanasse	E6-148	02-08-31
KOONEELUISIE, Koalie	E6-552	06-11-48
KOPALIE, Susie	E6-827	06-10-52
KOWNIRK, Josephee	E6-387	-11-13
NEWKINGAK, Jacopie	E5-325	19-11-42
NOOKIGUAK, Aitiana	E6-333	07-04-33
NOOKIGUAK, Oolootee	E6-708	23-01-54